

OBSERVATIONS ON USE OF LIVER
EXTRACT

By LOUIS E. MAHONEY *

WITH the great prolongation of life which has occurred in the last twenty-five years, and which is largely due to better sanitation and the advance of scientific medicine, there are necessarily more people living to greater ages and more suffering from high blood pressure. The search for some method for lowering blood pressure has been very thorough and very persistent, but until recently quite fruitless. About two years ago a group of Canadian investigators—MacDonald, James, Laughton, and Macallum—and a group at the University of Kansas, Major and Stollard have done considerable experimenting with extracts of liver tissue. Their observations have been scientifically controlled, and were not published to the profession until both these independent groups of investigators felt they had elucidated some new medical truths.

It has long been known that extracts of almost any tissue injected into the human body or that of a laboratory animal will produce a fall in blood pressure. However, extract of kidney and spleen usually produces a rise. The decline produced by tissue extracts is probably due to histamine, choline, peptones or proteoses. The investigators have prepared their extract in such a way that they feel quite certain all of these above-listed chemical compounds have been completely eliminated from the final product. Major of Kansas City, in a series of experiments performed on dogs has secured an entirely different set of graphic tracings with the liver extract than were produced by histamine. It is quite well authenticated that in the metabolism of protein foods certain substances are produced which have vasoconstrictor, and blood pressure raising qualities. Among these may be listed tyramine and methyl guanidine. These are end products formed when nucleoproteins are broken down. Tyramine, by the way, is the active principle of ergot. It is the hypothesis of Major that methyl guanidine collects in the blood and tissues upon failure of the kidneys to excrete it, and this substance, with possibly other blood pressure raising compounds, are the cause of the clinical condition known as essential hypertension. Graphic observation and animal experimentation shows that methyl guanidine injected into a cat or dog produces a marked rise in blood pressure and that liver extract will very quickly reduce the pressure to normal. This observation has been the tentative basis for methods of standardizing hepatic extract. The unit has been arbitrarily fixed as the amount of liver extract necessary to counteract the

rise in blood pressure produced by the injection of 1/10 of a milligram of methyl guanidine into the vein of a cat or dog weighing about 2.5 kilos.

Both the Canadian investigators and the Kansas City school feel that hepatic extract is of decided benefit when confined to essential hypertension. By essential hypertension I mean persistently elevated blood pressure in individuals in fairly good health with no eye symptoms, no discoverable foci of infection, no arteriosclerosis, and no abnormal urinary findings. It is not felt that the extract is of benefit when the arteries are sclerotic or when there is demonstrable kidney change. It is necessarily difficult to evaluate this method because there are so many things that will temporarily reduce blood pressure, and many new treatments have been proposed in the past and later rejected as worthless.

The method of administration of liver extract is as follows: The patient reports for observation every day or every other day. Blood pressure readings are taken before the dose of 1 cc. is given and thirty minutes and one hour afterward. Patients report every day or every other day for several weeks. Five grains of the dried extract is given by mouth, two or three times daily, as it is believed that there are some effects secured by oral administration. In small series of some half-dozen patients which I feel to be definitely essential hypertension, favorable results have been obtained. Thirty minutes after the hypodermic injection of doses varying from 1/2 cc. to 2 cc. of the extract the systolic pressure has almost uniformly dropped from 6 to 30 milligrams of mercury. In some instances diastolic pressure dropped and at other times it became higher. The patients were all individuals at the fifth or sixth decade of life and in reasonably good condition, who had had their hypertension for a number of years, but were suffering from various subjective symptoms, such as headache, sleeplessness, ringing in the ears, weakness, etc. Every patient in this small series expressed themselves as feeling better. The initial systolic reading varied from 240 to in the neighborhood of 170, and after treatment for several weeks the average reading varied from 180 to 145. In instances where the pressure has still remained high the patients have noted relief from distress and subjective symptoms, and pronounce themselves benefited. The initial doses should be very closely supervised, as a sharp fall may be produced and collapse supervene. Adrenalin should always be near at hand for emergencies. The ordinary restrictions with regard to exercise, diet and hygienic measures are, of course, observed. After the injection the pressure remains lowered twelve to twenty-four hours, and then slowly climbs back almost but not quite so high as previously.

While it is too early to form any definite conclusions from such a small series of cases among the especially favorable individuals, nevertheless one cannot help but obtain clinical impressions. My feeling is that liver extract properly used in essential hypertension will almost always temporarily, and frequently permanently reduce the pressure, and if it does not reduce the pressure it will at least improve the subjective symptoms and give the patient the feeling of well-being.

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